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Road safety challenges in Pakistan: an overview

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Abstract Pakistan's location provides economic advantage for freight transportation from the Indian Ocean to Afghanistan, China, and the Central Asian States. In late 1970s, Pakistan shifted focus from railway to roadway as the major mode of transportation. This policy shift introduced heavy vehicles for which highways were not designed. In late 1990s, migration to urban areas increased congestion on Pakistan's highways. In early 2000s, the economic sanctions on Pakistan were lifted in exchange for cooperation with the war on terrorism. The global war on terrorism also increased freight transportation from Pakistan to Afghanistan which supported ISAF forces. The military freight, urbanization, motorization, and congestion increased risk to road users. The World Health Organization reported 25,000–30,000 annual deaths on Pakistan's roads. This paper reflects upon strategic national issues including war on terrorism. To reduce road congestion, Pakistan must revise national transportation policy and split traffic volume into different modes.

Keywords Road safety · Pakistan · Motorization · Urbanization in emerging economies · Military logistics impact on infrastructures

Introduction

Pakistan is a middle-income country with a considerably high rate of road traffic casualties. In 2013, the World Health Organization reported 5,192 deaths per 100,000 in Pakistan (World Health Organization 2013). With a 95 % confidence level, the report estimated 26,751–33,510 annual deaths in Pakistan. In subsequent sections, we will discuss causes of Pakistan's high number of casualties. We provide an overview of transportation infrastructure, its role in a country's economic development, and impacts

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of an unhealthy transportation infrastructure. We will also provide an overview of Pakistan: its geography, existing transportation network, and its evolution of transportation policy-making. On the whole, we attempt to analyze and evaluate road safety in Pakistan. Lastly, we identify Pakistan's hierarchical causes for its road problems and recommend preventive and reactive strategies to improve its road safety.

Role and impact of transportation infrastructure

Transportation infrastructure plays a significant role in economic development and defense of a country. In the United States during the Eisenhower era, a highway network of interstate superhighways was envisioned and enacted by legislature as a way to strengthen the defense of the U.S. The development of the interstate highway network, however, helped the United States more in economic gains than in defense (Coyle et al. 2011).

The infrastructure includes, but is not limited to, sound policies, regulations, a multimodal network, and competent management for efficient and sustainable future resources and economic growth. The transportation infrastructure needs to facilitate safe transportation of goods and people from point-of-origin to destination. If absent, it results in loss of human lives and economic loss to gross national product (GNP). In its 2013 global status report on road safety, the World Health Organization (WHO) reported an annual loss of 1.24 million lives in road accidents around the globe (World Health Organization 2013). The annual death figures have been consistent since 2009, (See: WHO 2009) the time the WHO initiated its first report. The figures, however, must be considered in the context that every year the number of registered vehicles increases 15 %. The report further cites that Road Traffic Injuries (RTI) is the eighth leading cause of deaths and it forecasts that it will be the fifth leading cause by 2030.

Over 90 % of road fatalities and RTIs occur in predominantly low- and middle-income (LMI) countries. The variation in fatality rates of low-, middle-, and high-income countries are shown in Table 1. In poor countries, low-income people are the worst affected by RTIs. In most of the poor countries, families live in joint family systems where many household members rely on income of a single or limited number of family members. Their households are disproportionately disadvantaged due to direct and indirect drain of resources from prolonged hospitalization, funeral costs, and earnings lost while taking care of an injured or disabled household member (Geneva 2009). This worsens when the involved person is the only breadwinner of the family.

Table 1 Variation in fatalities rates of low-, middle-, and high-income countries

Income group	Fatality rate per 100,000	GNP cost (%) U.S. $ 100 billion	Registered motor vehicles (%)
Low	18.3	1	1
Medium	20.1	2	52
High	8.7		47

Source: WHO (2013)

Pakistan background

Pakistan, located in South Asia, borders India in the east, China in the north, Iran in the southwest, Afghanistan in the west, and Indian Ocean in the south. Its geographic location positions it at a strategic advantage for freight transportation from the Indian Ocean in the south to the energy-rich Central Asian States, war torn Afghanistan, and China in the north.

Pakistan spreads over an area of 796,096 square kilometers (sq. kms). Table 2 shows Pakistan's population and its provinces. In 2013, Pakistan was the sixth most populous country in the world with a population of 184 million (Statistics 2014). The country is distinctly divided into urban and rural areas. Table 3 shows the Urban and Rural split in Pakistan. People from rural areas often travel to urban cities in search of employment, education, and medical facilities. Their travelling is dependent upon Pakistan's multi-modal transportation infrastructure.

Pakistan's transportation infrastructure is comprised of 7,791 kms of railway line; 151 and 43 airports with paved and unpaved runways, respectively; 16,000 kms of gas and refined oil pipelines; and 262,256 kms of roadways (The World Fact Book 2013). The roadways' main highways connecting major cities are National Highways (9,555 kms), Asian Highways (5,352 kms), and Motorways (1,930 kms) (Rafiq 2014). Although Pakistan's transportation network Pakistan seems extensive, road traffic fatality statistics released by Pakistan Bureau of Statistics suggests the need for short-, medium-, and long-term measures to make transportation of people and goods safe in Pakistan. According to Pakistan's Bureau of Statistics 2012–2013 report, between 2004 and 2013 there were a total of 38,056 fatalities and 49,157 nonfatal accidents in all provinces of Pakistan in which 45,886 people were killed and 102,058 persons were injured (Statistics 2012–2013). Details of persons killed and injured in traffic accidents are shown in Figs. 1 and 2, respectively. The graphs show a downward trend of deaths and injuries in Punjab and Sindh; whereas, the number of deaths and injuries seems to be going upwards in Khyber Pukhtunkhwa and Baluchistan.

Table 4 shows Pakistan's other road safety statistics based on the World Health Organization's 2013 report.

Table 2 Area, population, and density by administrative units

Administrative unit	Area (sq. km)	1998 Population		Population density (per sq. km)
		Number	Percentage	
Pakistan	796,096	132,352,279	100	166.3
Khyber Pakhtunkhwa	74,521	17,743,645	13.41	238.1
FATA	27,220	3,176,331	2.4	116.7
Punjab	205,345	73,621,290	55.63	358.5
Sindh	140,914	30,439,893	23.00	216.0
Baluchistan	347,190	6,565,885	4.96	18.9
Islamabad	906	805,235	0.61	888.8

Source: http://www.pbs.gov.pk/sites/default/files/tables/AREA%20POPULATION%20DENSITY%20AND%20URBAN%20RURAL%20PROPORTION.pdf

Table 3 Urban and rural split by administrative units

Administrative unit	Urban	Rural
Pakistan	32.5	67.5
Khyber Pakhtunkhwa	16.9	83.1
FATA	2.7	97.3
Punjab	31.3	68.7
Sindh	48.8	51.2
Baluchistan	23.9	76.1
Islamabad	65.7	34.3

Source: http://www.pbs.gov.pk/sites/default/files/?tables/AREA%20POPULATION%20DENSITY%?20AND%20URBAN%20RURAL%20PROPORTION.pdf

Policy-making evolution in Pakistan

Pakistan is a Federal Republic of four provinces—Punjab, Sindh, Khyber Pakhtunkhwa, and Baluchistan—and Federally Administered Tribal Areas. At the federal level, the Ministry of Communication (MOC) is responsible for both the policy-making and the administration of transportation. Further, each province has a Road Transport Authority (RTA) responsible for planning, enacting, and implementing transportation rules and regulations.

Evolution of transportation policy-making began in Pakistan in 1977 when the Chartered Institute of Transport prepared a National Integrated Transport Policy (Hisam 2006). The policy-making continued with the assistance of the World Bank in 1999 and the Asian Development Bank in 2004. Recently, the governments of Pakistan and Japan conducted a study that proposed long-term policies (discussed later in this paper) to achieve a safe, stable, and sustainable transport system and network in Pakistan by 2025 (Centre and Agency 2006). The absence of a credible transportation policy and a lack of sound public transport mechanisms were coupled with people relying on personal vehicles to fulfill their transportation requirements. Aizaz Ahmed identified the increased number of vehicles in Pakistan at 410 % in early 2000s due to good macro-economic indicators (Ahmed 2007).

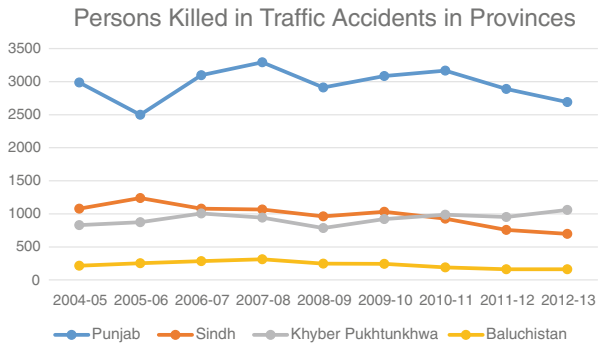

Fig. 1 Data Pakistan Bureau of Statistics

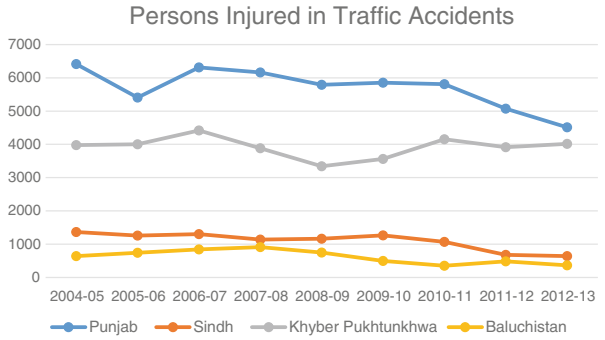

Fig. 2 Data Pakistan Bureau of Statistics

Methodology

In order to present a comprehensive overview for road safety in Pakistan, we relied on analysis of past research articles published in peer reviewed journals, reports of International Organizations like World Bank (See: World Bank 2013), Asian Development Bank, and World Health Organization, and data of non-profit organizations. We also reviewed research studies (mentioned in references) of articles for review of past international case studies. Besides reliance on said academic work, we have personal exposure to urban and rural life and knowledge of road safety issues in Pakistan. Our firsthand experience and knowledge of Pakistan's issues helped us to ascertain credibility of the reviewed studies. This paper differentiates from past works as it contains impacts of war on terrorism upon Pakistan's highways (Khan and Fatmi 2014; Choudary et al. 2009; Uddin 2008; Jafri 2013).

Literature review

Since the 1960s, the gradual deterioration of Pakistan's transportation infrastructure has been due to its focus away from reliance on railways as the major public and freight transportation mode. Due to rapid motorization and urbanization in the late 1990s and early 2000s, the deterioration crippled. Since the late 1990s, Pakistan's road safety issues have been highlighted in literature on road safety. Since then, different empirical, analytical, and engineering studies have been conducted which focused on policy-making and implementation issues, impact of motorization and urbanization, behavioral and attitudinal issues, and issues related to transportation engineering. In subsequent sections, we attempt to limit ourselves to policy, urbanization and motorization, and behavioral and attitudinal literature.

Policy and execution issues

Imran (2009) reviewed Pakistan's public transport policy from its pre-independence era. Before its independence, the British government preferred railways over road infrastructure as the public mode of transportation. In 1947 at the time of independence, the railway was the only transportation source for inter-city travelers. Pakistan's

Table 4 WHO (2013) Statistics about Pakistan

Population numbers for 2010	173,593,384
GNI capita for 2010 in U.S. dollars	1,050
Income level	Middle
Reported number of road traffic deaths	5,192
Estimated number of road traffic deaths	30,131
95 % confidence interval	26,751–33,150
Estimated road traffic death rate per 100,000 population	17.4
Drivers/passengers death rates %	
4-wheelers	16.1
2- or 3-wheelers	38.6
Cyclists	0
Pedestrians	40.9
Others or unspecified users	4.4
Estimated % seriously injured patients transported by ambulance	11–49
Training in emergency medicine available for:	
Doctors	Yes
Nurses	No
Vital registration system exists	Yes
Speed limit set at a national level	Yes
Maximum speed on urban roads (km/h)	95
Maximum speed on rural roads (km/h)	65
Around schools (km/h)	40
Effectiveness of overall enforcement	3 out of 10
National drunk driving law	Yes
Drink driving is defined by BAC	No
National helmet law	Yes
Law applies to driver and adult passenger	Yes
Helmet law applies to all road types and engines	Yes
There are helmet standards	Yes
Effectiveness of helmet law enforcement	2 on a scale of 10
Estimated helmet wearing rate	10 %
There is a national seat belt law	Yes
Seat belt law applicable to:	Frontseat passengers
Effectiveness of seat belt law	3 on a scale of 10
Seat belt wearing rates (drivers)	4.0 %
There is a national child restraint law	No
Legislation on mobile phone use	Sub-national
Law applies to hand held phones	Yes
Law applies to hands-free phone	No
There is a national road safety strategy	Yes
Road safety targets (fatal/nonfatal)	No
Number of registered vehicles	7,853,022
Policies promote cycling	No

railways remained as the focal transportation mode till the late 1950s. Since the 1960s, policy-makers shifted their focus from railways to road transportation (Imran 2009).

Pakistan's organizational structure of public transportation was then divided into road organizations and Public Transport Authorities. Imran's view is that the policy-makers failed to plan public transportation due to inadequate governance structure; therefore, all public transportation policies to run transportation through the public sector failed over time. Resultantly, public transportation was privatized over time (Tiwari 2002). Pucher and Korattyswaroopam (2004) consider privatization of public transportation an efficient source to reduce government expenditure (transportation subsidies). In Kah's (2001) study of privatization of urban transportation in sub-Saharan Africa, private transportation fails because of the absence of significant government role in policy definition, investment, and implementation. Imran (2009) sides with Kah (2001) and believes that the lack of government control resulted in failed transportation policies in Pakistan.

Impact of motorization and urbanization

Through an empirical study, Batool et al. (2012) developed a schematic diagram of Pakistan's possible road safety issues. The issues are mainly divided into five categories: insitutional, execution, physical and operational, attitudinal and behavioral, and accident research and data bank (Batool et al. 2012).

The majority of issues fell under the category of physical and operational Issues with motorization and urbanization at the top. According to Pakistan's Population Bureau of Statistics, the urbanization growth rate surpasses overall population growth. Haider and Badami (2011) are of the view that the poverty level in Pakistan has pushed poor people to cities in search of employment, thereby increasing pressure on major cities' scarce resources. Mir Shabbar Ali et al. (2010) reported in a conference held in 2010 in Karachi Pakistant that Pakistan's cities have unique characteristics of rapid urbanization, high population density, mixed land use, and high usage of public and non-motorized transport (Ali et al. 2010).

Imran and Low (2003) discussed negative externalities of rapid motorization and urbanization in the form of increased travelling time from point-of-origin to destination in urban cities due to congestion. Environmental and economic impacts due to air, noise pollution, and road crashes also make an impact (Imran and Low 2003). They found that urbanization in Pakistan is a mixture of planned and unplanned activities. According to them, urban and transportation planning cannot be done in isolation because they are inter-related and need to complement each other during the planning stage.

In a 2012–2013 economic survey, Pakistan's government acknowledged that its highway network was under strain due to rising traffic flow and the highways' insufficient increase in capacity (Askari 2007–2008). Since late 1990s, realizing the importance of Pakistan's geo-strategic location and the growing needs of transportation, the government of Pakistan has consistently improved the high- and low-density roads. Table 5 shows Pakistan's estimated length of low- and high-density roads from 2007 to 2013.

Behavioral and attitudinal issues

The Association for Safe International Road Travel (ASIRT) mentioned in its 2005 report that common factors in road crashes in Pakistan include irresponsible behavior,

Table 5 Pakistan road density

Year	Category	Punjab	Sindh	KPK	Balochistan	Total
2007–08	Total	104,115	80,863	42,369	29,451	256,798
	Low Type	33,864	26,301	13,781	9,579	83,525
	High Type	70,251	54,562	28,588	19,872	173,273
2008–09	Total	104,114	80,863	42,369	29,452	256,798
	Low Type	32,949	25,591	13,409	9,321	81,270
	High Type	71,165	55,272	28,960	20,131	175,528
2009–10	Total	105,085	81,618	42,765	29,727	259,195
	Low Type	32,179	24,993	13,095	9,103	79,370
	High Type	72,906	56,625	29,670	20,624	179,825
2010–11	Total	105,253	80,625	42,550	29,50	228,428
	Low Type	32,147	24,000	13,000	9,000	78,147
	High Type	73,106	56,625	29,550	20,500	179,781
2011–12	Total	106,455	80,960	42,975	29,625	260,015
	Low Type	32,590	24,335	13,140	9,125	79,190
	High Type	73,865	56,625	29,835	20,500	180,825
2012–13	Total	107,805	81,385	42,980	29,655	261,825
	Low Type	33,090	24,685	13,140	9,130	80,045
	High Type	74,715	56,700	29,840	20,525	181,780

Source: Pakistan Economic Survey 2012–2013 (Yusufi 2012–2013)

lack of knowledge of traffic laws, inadequate police enforcement, and poor road conditions (ASIRT 2005). Many drivers have not taken formal driving lessons or to not possess driving licenses. Bus drivers often compete for passengers on the road; thereby, increasing the risk of road crashes. Luby et al. (1997) and Mirza et al. (1999) identified in their studies that bus drivers on the roads of Karachi, a metropolitan city of Pakistan, drive recklessly and buses that comprises 1.8 % of registered vehicles are involved in 27 % of RTIs and 43 % of fatalities (Luby et al. 1997; Mirza et al. 1999).

Ahmed (2007) also deliberates on the attitudinal issues prevailing in Pakistan. He wrote that pedestrians do not respect zebra crossings; rather, they prefer J-walking; motorcyclists do not wear helmets due to warm weather and a constrained side view; and drivers tend to not fasten their seat belts. Despite the existence of Pakistan's seat belt law, there is dearth of its execution except on motorways where police strictly enforce the use of seat belts. Shakeel, an Assistant Inspector General of Pakistan's National Highway Police, informs that the non-fastening of seat belts is the major cause of road deaths in motor vehicle accidents. On the basis of a random sampling study, he informs that only one percent of commercial bus drivers fasten their seat belts while driving and only two percent of bus passengers put on their seat belts. Besides the low ratio of seat belt fastening, he also informs that commercial van drivers falsify wearing seat belts by simply laying their seat belts over their shoulders and not actual locking them (Ahmed n.d.).

Batool et al. (2012) found that irrespective of socio-economic and demographic characteristics, all drivers indulge in offences like horn blowing, tailgating, or driving

unregistered vehicles. We also noted that driving under the influence of alcohol and drugs are also causes of errant behavior on the road.

Findings

During the literature review, we found that Pakistan faces different strategic, tactical, and operational issues. The details of a few important issues are discussed in subsequent subsections. For the last couple of decades, Pakistan's road safety issues have been significant. Its transportation strategic issues are addressable though it may take a longer span of time to revert the prevailing situation. During the literature review, we also found that Pakistan's road safety issues can be categorized differently. They can be categorized into Strategic, Tactical, and Operational levels. It does not need elaboration that the strategic, tactical, and operational issues are interrelated and that any slack in any one of them impacts the others over time. These issues can also be explored under both proactive and reactive approaches. In the paper's subsections, we will only look at the strategic issues because we believe that the resolution of strategic issues will devolve improvement to both the tactical and operational levels. When strategic transportation is streamlined, it will prevent inefficiencies in the system. We leave the exploration of Pakistan's tactical and operations issues to future researchers.

Pakistan's strategic issues are related to policy-making; its leaders' vision of their country's transportation network; Pakistan's national economy, and the external environment. Coincidentally, when Pakistan was at the lowest ebb of its economic state in the late 1990s, developments in its external environment in the after math of 9/11 complicated Pakistan's transportation and road safety.

Transportation policy–a question mark

During the literature review, we found that Pakistan does not have a comprehensive national transportation policy at the strategic level. Although tactically the Pakistan government provided various 5-year transportation plans, these plans were neither coherent nor complemented each other. For example: The first 5-year plan for 1955–1960 reflected the government's priority towards rail transportation. In the second 5-year plan (1960–1965), the government encouraged public transportation by investment in public buses. In the third 5-year plan (1965–1970), public transport was deregulated and private competition was embedded into road transportation. The modal shift from railway to road transportation is irrational as railway is an efficient mode of transportation compared to road transportation. In a major study (Ali 1994), 489 kms was calculated as the breakeven distance for freight transportation between rail and road. The majority of Pakistan's freight is transported over 489 kms from the south to the north, thereby making railway Pakistan's economic mode of transportation. Kalam (1991) identified that a 3,000 HP locomotive costing Rs 30 million can move 2,000 tons; whereas, a 300 HP truck costing 3 million can only move 20 tons—that is a ten to one cost-effectiveness ratio. Kalam is of the view that a policy shift from railways to road transportation was based on vested interests rather than technological improvement. The strategic shift from railway to road introduced heavy transport on the road network which gradually increased over time (discussed earlier). Resultantly, Pakistan

transportation infrastructure was affected on cost effectiveness, environment, and risk scales. The roads became riskier for both motorized and non-motorized vehicles. The heavy transport vehicles with different loads and breaking dynamics increased inefficiencies at the operational level. For example, recently, in the southern province of Sindh, 58 people were killed in a road accident between a truck and bus (Memon 2014).

Infrastructure

In the late 1990s, Pakistan faced tough economic sanctions in the wake of the nuclear explosions of 1998. People from rural areas, in search of employment, dwelled temporarily or permanently in urban areas. The migration from rural to urban areas expanded Pakistan's major cities and transportation demands. International communities lifted economic sanctions in the aftermath of 9/11 in lieu of Pakistan's support to the war on terrorism. An era of economic revival began soon afterwards. The banking sector reduced interest rates and offered leasing facilities at very attractive rates. Those who shifted from rural areas to cities needed personal transport for commute to their ancestral areas. This gave rise to motorization in Pakistan, which resulted in congestion on roads and highways. Soon after the U.S. attacks on the Taliban government in Afghanistan, Pakistan became a key regional player in providing logistics' support to international forces in Afghanistan. With these external and internal developments, we say that motorization, urbanization, and the war on terrorism converged in Pakistan in the same timeframe. The war on terrorism is relevant to this paper as it affects directly and indirectly Pakistan's transportation infrastructure. Pakistan is the cheapest freight transportation route from the Indian Ocean to the International Security Assistance Force (ISAF) bases in Afghanistan. The National Highway Authority—the agency responsible for planning and maintenance of highways in Pakistan—planned and executed expansion of its highways by constructing a network of motorways in the 1990s. The first motorway, M1, from Islamabad to Lahore was inaugurated in 1997. The planning phase catered to only forecasted Pakistani traffic. The expansion planning did not cater to the increased traffic volume that conveyed ISAF freight from Karachi to Afghanistan. The existing highways did not sustain the enhanced traffic volume and failed before the expiration of their stipulated lives. The war on terrorism effected transportation in two ways. Firstly, the construction of new motorways slowed down. Secondly, the maintenance of existing highways did not match the deterioration rate of existing highways. As a result, the strategic planning of highway expansion to cater for motorization and urbanization requirement failed to provide the desired results at the operational level. According to GlobalPost, an average of 200 to 250 containers enter into Afghanistan from Pakistan on a daily basis (Latif 2011).

Safety as a policy

Besides road accidents, there are many other reasons for deaths in Pakistan. South Asia Terrorism Portal (www.satp.org) shows 55,000 plus people lost their lives in war on terrorism since 2003. The details of Pakistan's casualties are shown in Table 6. The Pakistani Nation faces such a significant number of dead bodies that the policy-makers, legislature, and society-at-large have become insensitive to these fatalities. Having said that does not exempt those at the helm of policy from taking credible measures for the

Table 6 Fatalities in terrorist violence in Pakistan 2003–2014

Year	Civilians	Security force personnel	Terrorists / Insurgents	Total
2003	140	24	25	189
2004	435	184	244	863
2005	430	81	137	648
2006	608	325	538	1471
2007	1522	597	1479	3598
2008	2155	654	3906	6715
2009	2324	991	8389	11704
2010	1796	469	5170	7435
2011	2738	765	2800	6303
2012	3007	732	2472	6211
2013	3001	676	1702	5379
2014	1546	505	2694	4745
Total	19702	6003	29556	55261

Source: http://www.satp.org/satporgtp/countries/pakistan/database/casualties.htm

mitigation of road fatalities' causes. Batool et al. (2012) are of the view that policy-makers in Pakistan place a very low value on safety and do not take responsibility to devise long-term transportation policies integrated with safety (Batool et al. 2012).

Additionally, the government lacks initiatives to embed safety into its transportation infrastructure. The Association for Safe International Road Travel (ASIRT) mentioned in its 2005 report that common causes of road crashes include drivers' lack of knowledge of traffic laws, regulations, education, and training (ASIRT 2005). The report further mentioned that most of the highways are not well lit or painted for night driving.

The World Health Organization (WHO) (2013) reported that according to Pakistan Vehicle Regulations both front and rear seat belts are required in new and imported vehicles but national seat belt laws do not apply to front and rear seat occupants. The enforcement of seat belt laws on a scale from 1 to 10 is only 3. On the basis of data obtained from Road Traffic Injury Research and Prevention Centre, Jinnah Postgraduate Medical Centre, Karachi, that only four percent of drivers wear seat belts while driving. Also, the law does not mandate child restraint systems in vehicles.

According to the WHO (2013) report, the national helmet law is applicable to both driver and passenger on all types of roads and engines. Its enforcement is only 2 on a scale of 1 to 10. Only 10 % of motorcycle riders wear helmets while riding motorcycles.

These statistics indicate that execution of available regulations at the operational level is not proactive. Based on their interviews with experts, Batool et al. say that experts in Pakistan are of the view that safety research in Pakistan is reactionary in nature. There is no specific allocation of any department to carry out a sustained safety audit of current and upcoming projects. Past studies also show that Pakistan does not have a clear strategic direction because it is dependent on foreign funding for the execution of projects. The foreign donors are so strong that they dictate their terms and

conditions of implementation, which mainly focus on engineering rather than safety (Imran and Low 2005).

Conclusion and implications

The main cause of Pakistan's road safety issues lies in the flawed strategic vision of its leadership. The policy shift from railways to roadways in the early 1970s resulted in gradual and systematic degradation of the country's transportation infrastructure. According to Kalam (1991), the policy shift was based on vested interest of the road transport mafia. The mafia remained so strong in Pakistan that it never let the government revise its policy in favor of railways. The inefficient railway system shifted commuters' preferences to road transportation for inter- as well as intra-city travelling. Peoples' preferences to road transportation resulted in congestion on roads, thereby increasing threat to public lives. The deaths on roads can be effectively curtailed by changing strategic direction, splitting the freight transportation from road to railways, and interconnecting different modes of transportation. The strategic planners of Pakistan need to revive railways as the major transportation mode for freight and people. The shift from road transportation to railways will depressurize roads and split the traffic volume, which will help improve safety on Pakistan's roads.

The implications of a policy shift from railways to roadways would have been much less had policy-makers strategically employed enough resources to build a massive road transportation infrastructure. Such kinds of measures were difficult as Pakistan's economy was subject to tough economic sanctions in the wake of its nuclear explosions in 1998. Despite all odds, Pakistan continued its efforts to match the demand. The lack of strategic vision, however, was evident when the first motorway (M1) was planned and built between Lahore and Islamabad. The revenue-generation dynamics of this motorway would have been different had it been constructed in the south, beginning from the port city of Karachi.

The developments in Pakistan's external environment further complicated road safety issues. War on terrorism in Pakistan amplified traffic volume on Pakistan's already congested highways. The government lacked resources to maintain its already dilapidated transportation infrastructure. The increased traffic from heavy vehicles conveying cargo and fuel to Afghanistan taxed Pakistan's worsening road conditions. This heavy traffic not only crippled the road conditions, but also posed serious danger to common user passenger vehicles. The developments in the external environment not only increased traffic going to Afghanistan, but as the economic sanctions in lieu of Pakistan's support to the war on terrorism were lifted, vehicle registration increased in local cities and economic wellbeing improved. To encourage investment into the economy, the government reduced interest rates which facilitated provisioning of personal vehicles on easy installments. The increase in motorization—especially two- and three-wheeler vehicles—proved to be hazardous to road users. The extensive motorization resulted in more casualties, congestion, and environmental degradation.

Pakistan's low literacy rate and lack of awareness of rules, regulations, and safety knowledge amongst drivers and pedestrians complicate road safety. The drivers on Pakistan's roads fail to fully appreciate the value of human life and the socio-economic impacts on the victims' families. There is no legal requirement of any educational

qualification, training, and skill level for drivers to acquire driving licenses of heavy vehicles. People get driver's licenses without much effort by taking a simple behind-the-wheel test. The ease of acquiring licenses poses potential hazards towards road rage. The deaths' proportion on Pakistan's roads can be significantly reduced, but it may take a long time before new policies help improve literacy, awareness, and the skills of road users.

The economic development of almost every country is dependent upon interconnection of its markets with its transportation facilities. Pakistan is strategically located at a geographic junction where it can tap economic activity through a sound transportation network between its south and north sections. The economic activity will not only increase employment resources, but will also help reduce social differences between urban and rural areas. This will reduce migration towards urban cities and increase equilibration of social well-being and reduce deaths on roads due to more limited transportation demand.

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